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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,154	03/11/2005	Tatsuo Akai	0020-5309PUS1	9169

2292 7590 03/20/2007  
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EXAMINER
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HWU, JUNE

ART UNIT	PAPER NUMBER
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1661

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	03/20/2007	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 03/20/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

**Office Action Summary**

Application No.

10/511,154

Applicant(s)

AKAI ET AL.

Examiner

June Hwu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1,2 and 9-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3-8 and 16-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 October 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 10/14/04, 4/15/05, 5/16/06.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

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### DETAILED ACTION

1. The response to the restriction filed December 1, 2006 is acknowledged and entered.
2. The Group and/or Art Unit location of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Group Art Unit 1661.
3. Applicants' election with traverse of Group II (claims 3-8 and 16-20) is acknowledged. The traversal is on the ground(s) that there is no serious burden in the examination of this application. This argument is not found persuasive because as stated in the previous Action Group I and Group II are distinct products wherein Group I comprises an equipment for transforming plants comprising a microporous body and a carrier solution containing a gene with which the plant is transformed and Group II is a system for transforming plants comprising a plurality of microporous bodies and holding means for removing the plurality of microporous bodies, in which a search of Group I would not find all of the art in Group II. A search of Group II does not require a search for a carrier solution containing a gene and a search of Group I does not require a search for a holding means or a plurality of microporous bodies.

The method of plant transformation in Group III would require a different search from the equipment of Groups I and II and the search of Group III would not find all of the art in Group I and II. A search of Group III does not require a search carrier solution containing a gene and a holding means and a search of Groups I and II does not require a search for the method of transforming plant.

The method of selecting plants harboring a heterogeneous gene of Group VI would require a different search from Group III and all of the art found in Group IV would not be found in Group III. A search of Group VI does not require a search for a method of transforming plants

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and a search of Group III does not require a search for a method of selecting plants harboring a heterogeneous gene.

The method of selecting plants harboring a heterogeneous gene and confirmation of the resistant gene or expression of a heterogeneous gene of Group V would require a different search between Groups III and IV because of the different methods and a search of Group V would not find all art in Groups III and IV. A search of Group V does not require a search of a method of plant transformation and a method of selecting plants harboring a heterogeneous gene, and a search of Groups III and IV do not require a search of selecting plants harboring a heterogeneous gene comprising seeding a plant harboring the resistant gene and confirming the grown plant harbors the resistant gene.

The products of Groups I and II and would require a different search from the methods of Groups III, IV and V.

The requirement is still deemed proper and is therefore made FINAL.

4. The information disclosure statement filed May 16, 2006 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because the Chinese patent is not in English. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).

### ***Drawings***

5. The drawings are objected to because Fig. 6 should not contain any description. The description should be provided in the specification under the brief description of the drawings. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Objections to the Claims***

6. Claim 8 is objected to because of the following informalities:

Claim 8 contains a list of botanical names. The botanical names should be either italicized or underlined.

Claim 8, line 7, the plant name "brusseles" should be changed to read -- Brussels --.

Claim 8, line 23, the plant name "beat" should be changed to read --beet --.

Claim 8 lines 23-27, and 45-46, the botanical names should be placed within parentheses.

Claim 8, line 45, the rectangular symbol between "poplar" and "Populus" should be deleted.

7. Claims 4 and 8 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicants are required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Specifically:

Claim 3 is drawn to a system for transforming plants comprising a plurality of microporous bodies and a holding means for the plurality of microporous bodies. Claim 4 is drawn to vacuum infiltration transformation. However, no structural limitations are recited in the claim.

Claim 3 is drawn to a system for transforming plants comprising a plurality of microporous bodies and a holding means for the plurality of microporous bodies. Claim 8 is drawn to plants selected from the group of useful trees. However, there is no structural difference in the apparatus introduced by its intended use with a particular plant species. Thus, claim 8 fails to further limit claim 3.

8. Applicant is advised that should claim 5 be found allowable, claim 16 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. Claim 16 is dependent on claim 4, which fails to further limit claim 3 because no structural limitation are described. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

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Applicant is advised that should claim 19 be found allowable, claim 18 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. Claim 18 is dependent on claim 4, which fails to further limit claim 3 because no structural limitation are described. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8, line 3, the recites "selected from the group consisting of a useful tree".

However, not all members of the Markush group are trees.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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10. Claims 3, 5-8, 19, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated over Akai (U.S. Patent No. 6,314,678 B1). in view of Tanklevsky et al (U.S. Patent No. 6,306,645 B1).

The claims are drawn to an apparatus for transforming plants comprising a plurality of microporous bodies, wherein a plant seed of trees, vegetables, foliage plants, flowering plants and conifers can be germinated and grown by absorbing an aqueous nutrition which is retained in communicating pores in the cylindrical shape microporous body held by the holding means and are transformed by immersing them in a carrier solution.

Akai et al teach a cultivating apparatus comprising of a first microporous box and a second microporous box capable of being fitted into the first microporous box. The microporous boxes are made of No. 10 clay and Porcelain No. 2 clay (col. 5, lines 22-23). To make the microporous box more porous for water absorption and discharge 50 to 60% of petalite should be mixed with the clay (col. 5, lines 24-25). The communicating pores in the microporous body were achieved by applying a temperature fire of 1200°C to the mold to obtain the desired pore size (col. 5, lines 37-41). The holding means in Fig 7 (41) is made of flexible synthetic resin (col. 7, lines 58-59) and in Fig. 8 (50) the holding means (col. 8, lines 5-8) supports the cylindrical shape microporous bodies. The storage tank is the water supply tank (Fig. 6A (46)). The water supply pipe or the aqueous nutrition-supplying means is filled with glass fiber and is between the microporous box so that the nutrient/water or the aqueous nutrition can be supplied into the inner space (col. 6, lines 3-8, Fig. 2B (20) and Fig 6A (44)). The plant seed of any cultivated plant is sown on one side surface of the microporous box (col. 6, line 27). The shape of the microporous body is cylindrical (col. 9, line 57 and see Fig. 3).



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11. Claims 3, 5, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated over Tanklevsky et al (U.S. Patent No. 6,306,645 B1).

Tanklevsky et al teach a plurality of three chambers (col. 9, line 37) for transforming plant tissue (col. 10, lines 62-63) of strawberries, beets, onions, orchids (cymbidium), ornamental flowers (such as chrysanthemum, carnation, hyacinth, rose, cyclamen, poinsettia, Barberton daisy, sunflower, fish geranium, petunia, African violets, torenia and the like), and food crops (such as garlic, celery, asparagus, sugar beet, cauliflower, brussels sprout, cabbage, caraway, chicory, carrot, buckwheat, fennel, soybean, sweet potato, lettuce, tomato, alfalfa, rice, parsley, pea, eggplant, potato, wheat, maize, rape, flax, sugarcane, papaya, squash, cucumber, watermelon, melon, orange, coffee, almond, grapevine, apple, apricot, persimmon, fig, chestnut and the like) (col. 7, line 67 to col. 8, line 2). The plant support matrix consists of a microporous body made of absorbent gel, absorbent particles, polyurethane foam or super absorbent gel (col. 8, lines 51-60). The holding means is made of semi-rigid plastic made of polypropylene or high-density polyethylene (col. 9, lines 4-5). The growth medium is the aqueous nutrition, which includes a combination of nutrients such as microelements, macro elements, and vitamins (col. 8, lines 40-50). There is at least one fluid communication channel (Fig. 1 (26)) or aqueous nutrition supplying means, wherein the supplementary substance (may include additional growth medium, hormone, DNA or RNA (col. 8, lines 62-67) can be added to the growth chamber (col. 9, lines 41-45). The supplementary substance is stored in the supplements reservoir (col. 9, line 42 and Fig. 1 (24)) or storage tank. Tanklevsky et al invention may also be used for plant transformation (col. 8, lines 8-12).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 3, 4, 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akai in view of Harrison et al (WO 00/63400).

The claims are drawn to an apparatus for transforming plants comprising a plurality of microporous bodies, wherein a plant seed of trees, vegetables, foliage plants, flowering plants and conifers is germinated and grown by absorbing an aqueous nutrition which is retained in communicating pores in the cylindrical shape microporous body held by the holding means and are transformed by vacuum infiltration.

The teachings of Akai et al are discussed above.

Akai et al do not teach that the transformation is by vacuum infiltration.

Harrison et al teach that gene transformation by *Agrobacterium* of dicots and monocots (p. 12, lines 26-27) may be made by vacuum infiltration. The seeds are planted in a medium capable of supporting growth (p.15, lines 8-9). Any plant growth medium capable of supporting the infiltration process and the *Agrobacterium* within the plant can be used for vacuum infiltration (p. 16, lines 16-18). Then *Agrobacterium* suspension in the infiltration medium is added to a container large enough to immerse the above ground of the plant in the *Agrobacterium* suspension (p. 16, lines 22-24). Then the plant is vacuum at about 28 mmHg for about three minutes (p. 17, lines 3-5). After vacuum infiltration the plant is placed in a growth

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chamber for about a week and the vacuum infiltration is repeated (p. 17, lines 8-19). Then the treated plant is allowed to set seed (p. 17, lines 23-24).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus as taught Akai and to use vacuum infiltration to introduce *Agrobacterium* to the plant as taught by Harrison. One of ordinary skill in the art would have been motivated to do so given that vacuum infiltration is less labor intensive as compared to transformation through tissue culture. Moreover, large seeds are more difficult to transform and tissues may be difficult to regenerate through tissue culture (Harrison reference p. 5, lines 3-5). Furthermore, one of ordinary skill in the art would have a reasonable expectation of success in the combination of Akai and Harrison because of the success rate in producing transformed plants and it would be a choice of experimental design and is considered within the purview of the cited prior art. Thus, the invention as a whole was clearly *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

### **Conclusion**

13. No claims are allowed.

### **Correspondence**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to June Hwu whose telephone number is (571) 272-0977. The Examiner can normally be reached Monday through Thursday from 6:00 a.m. to 4:30 p.m.


If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Anne Marie Grunberg, can be reached on (571) 272-0975. The fax number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JH



ANNE KUBELIK, PH.D.  
PRIMARY EXAMINER